

## **Additional Information**

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**Attached for your information is a paper  
which Mr. Hays presented on March 27 at the  
2002 Environmental Information  
Association's Annual Conference in Austin,  
Texas.**



# **Mold Investigations for Insurance Claims in South Texas**

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*Presented for:*

**EIA 2002**

**Improving Our Living Environment:  
Building Solutions**

*Presented by:*

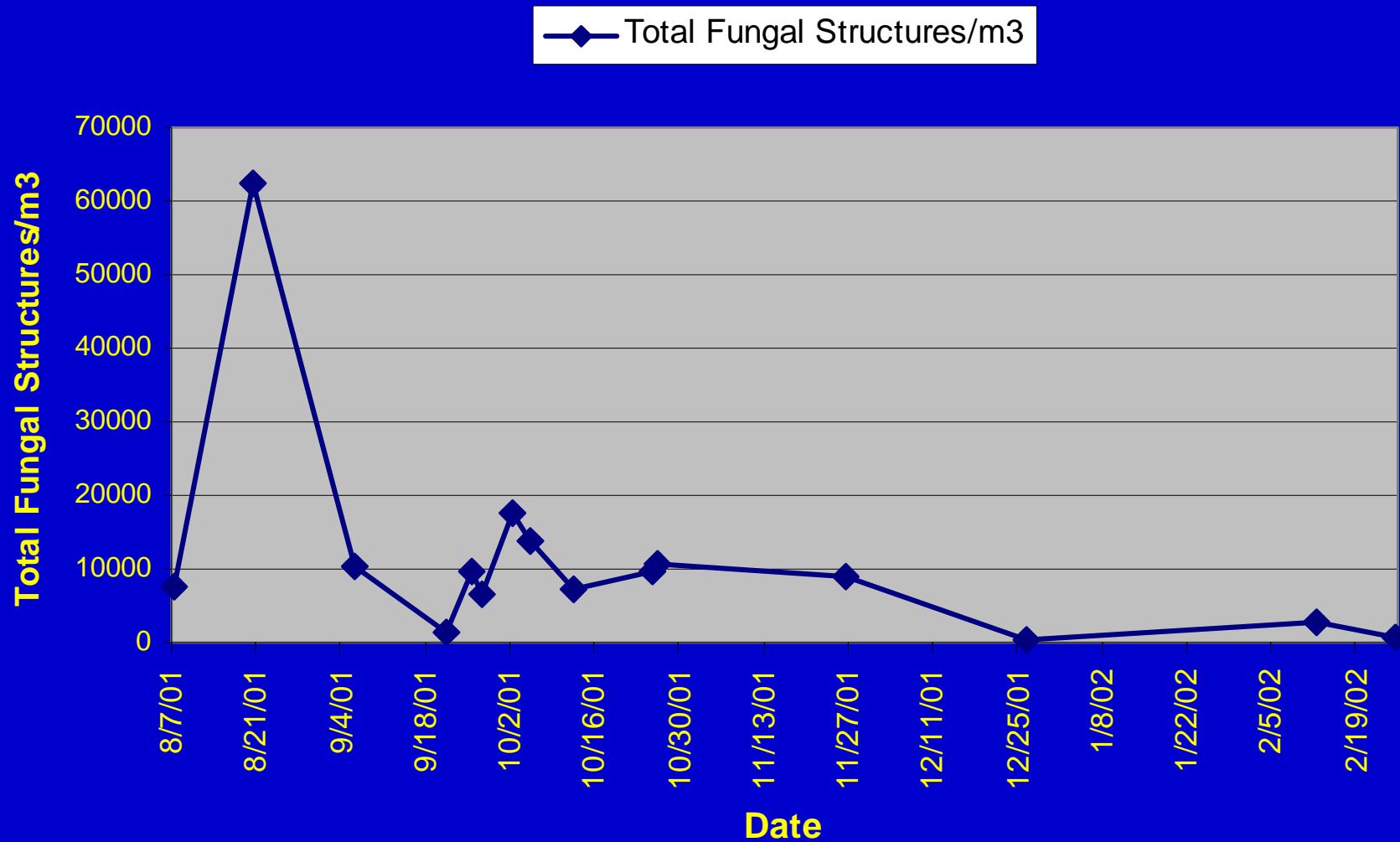
**Steve M. Hays, CIH**

**Gobbell Hays Partners, Inc.  
Nashville • Cleveland • Denver • San Antonio  
[www.ghp1.com](http://www.ghp1.com)**

**March 27, 2002**



## Nonviable Outside Results



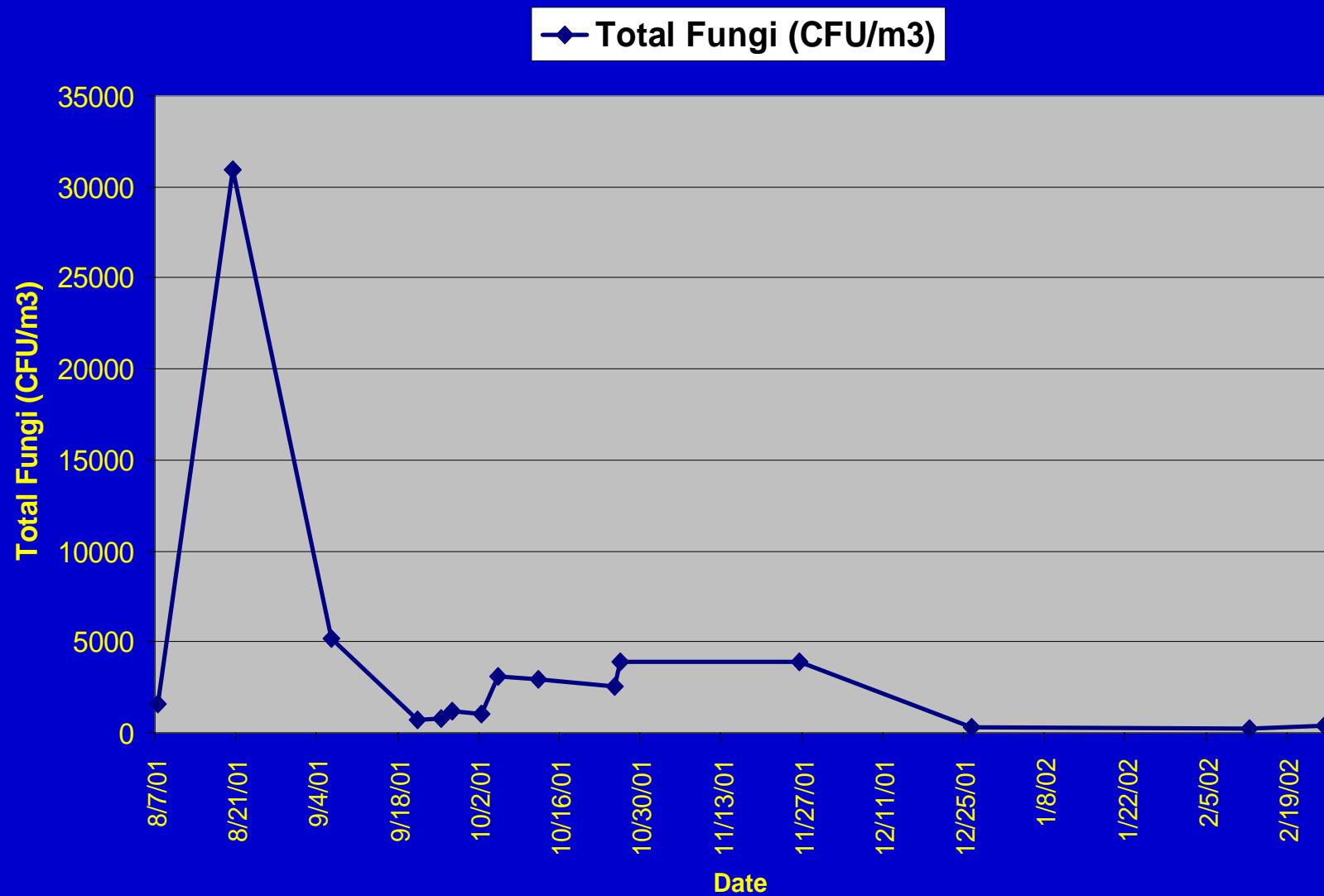
# Nonviable Outside Air (Total Fungal Structures/m<sup>3</sup>)

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- Mean = 11,315
- Standard Deviation = 14,465



## Viable Outside Results

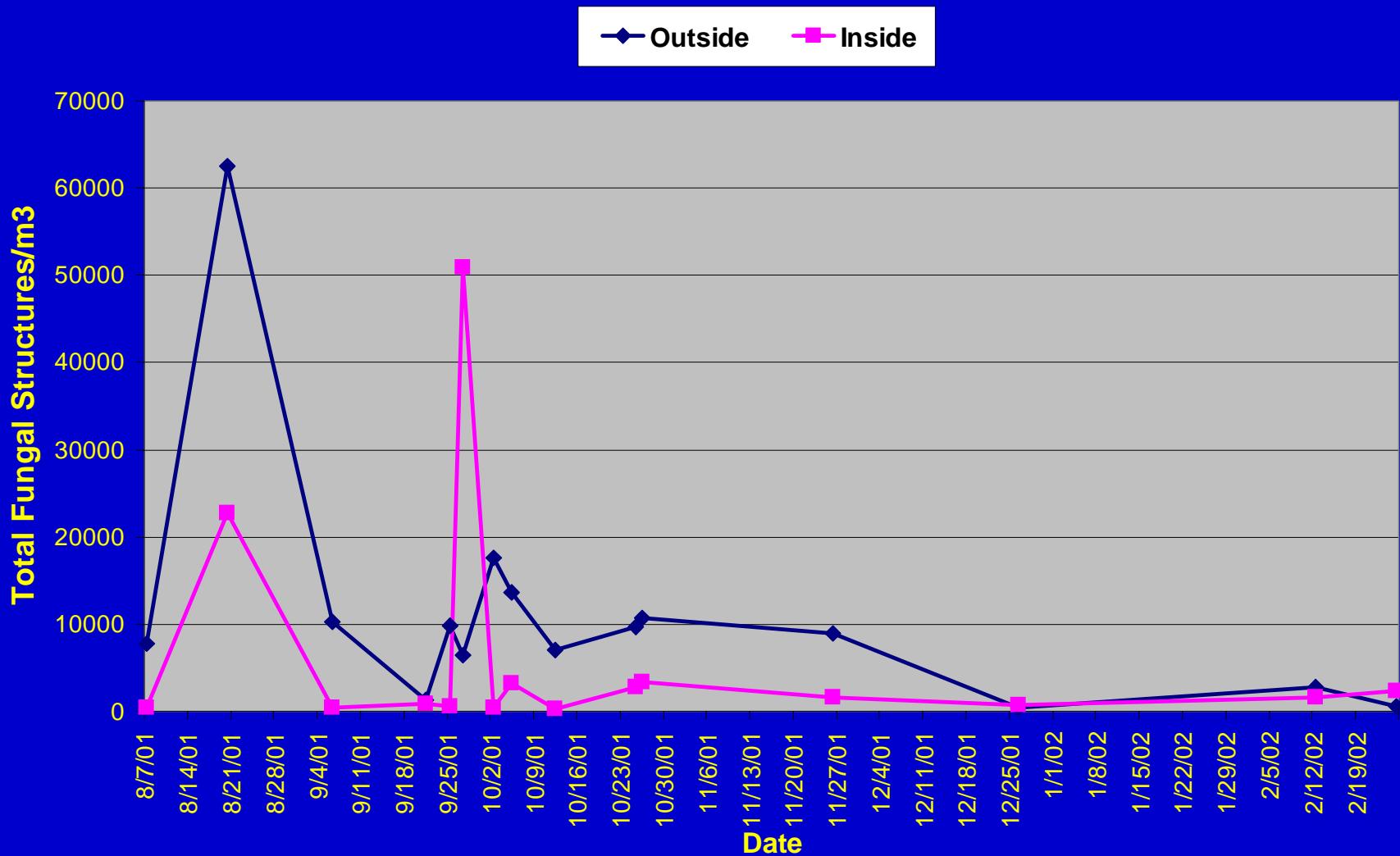


# Viable Outside Air (Total Fungi in CFU/m<sup>3</sup>)

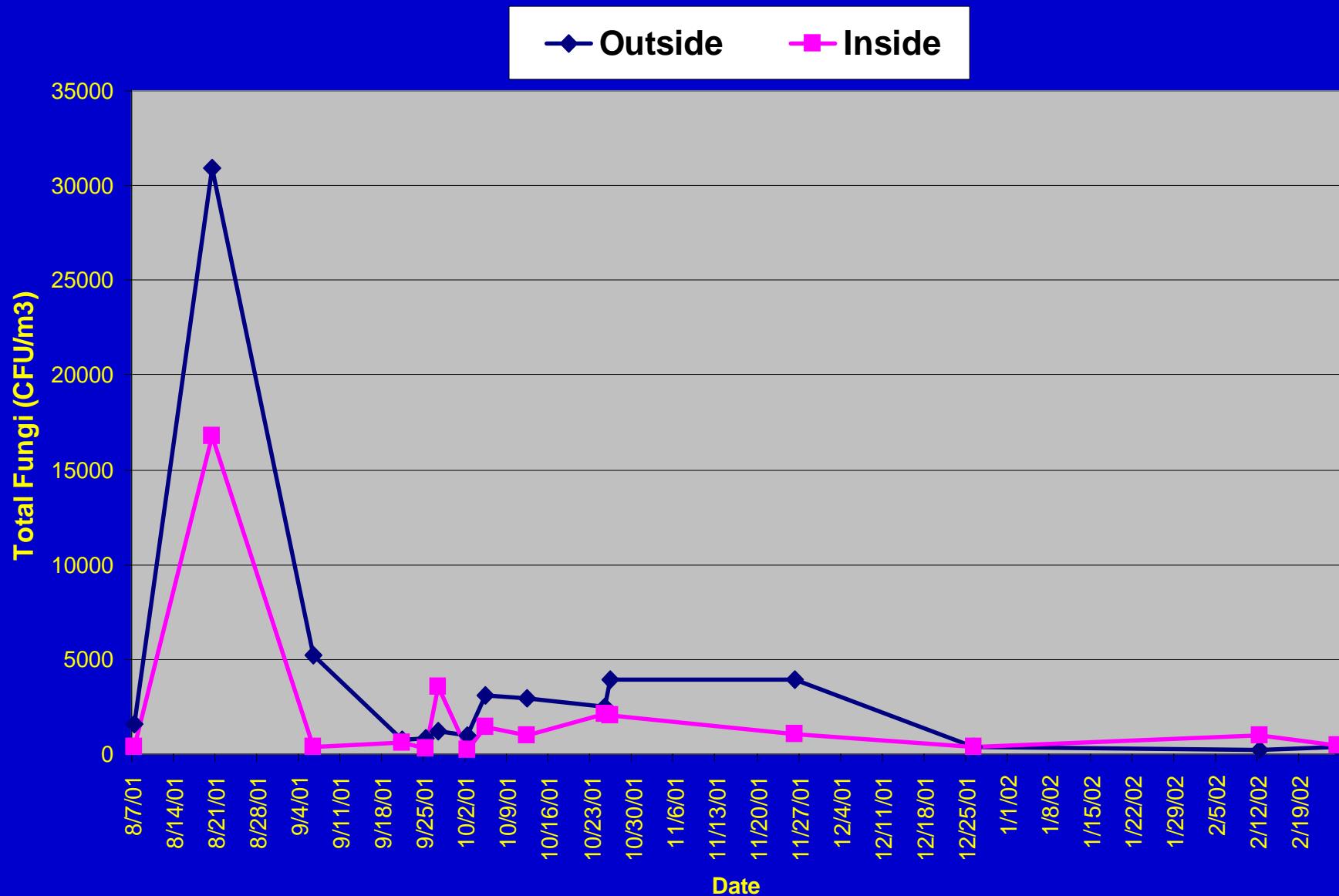
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- Mean = 3,925
- Standard Deviation = 7,375

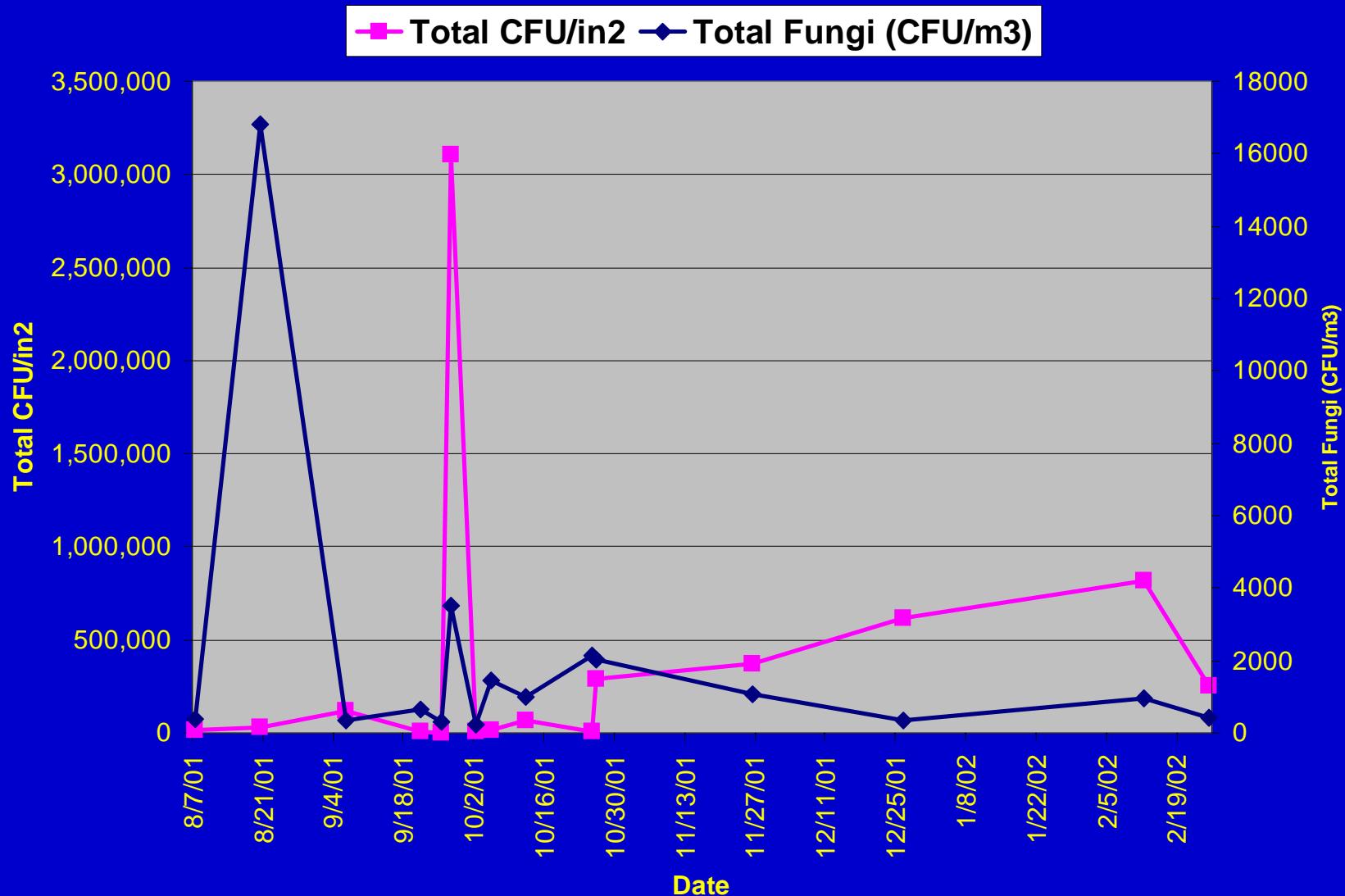
## Nonviable Outside/Inside Results



## Viable Outside/Inside Results

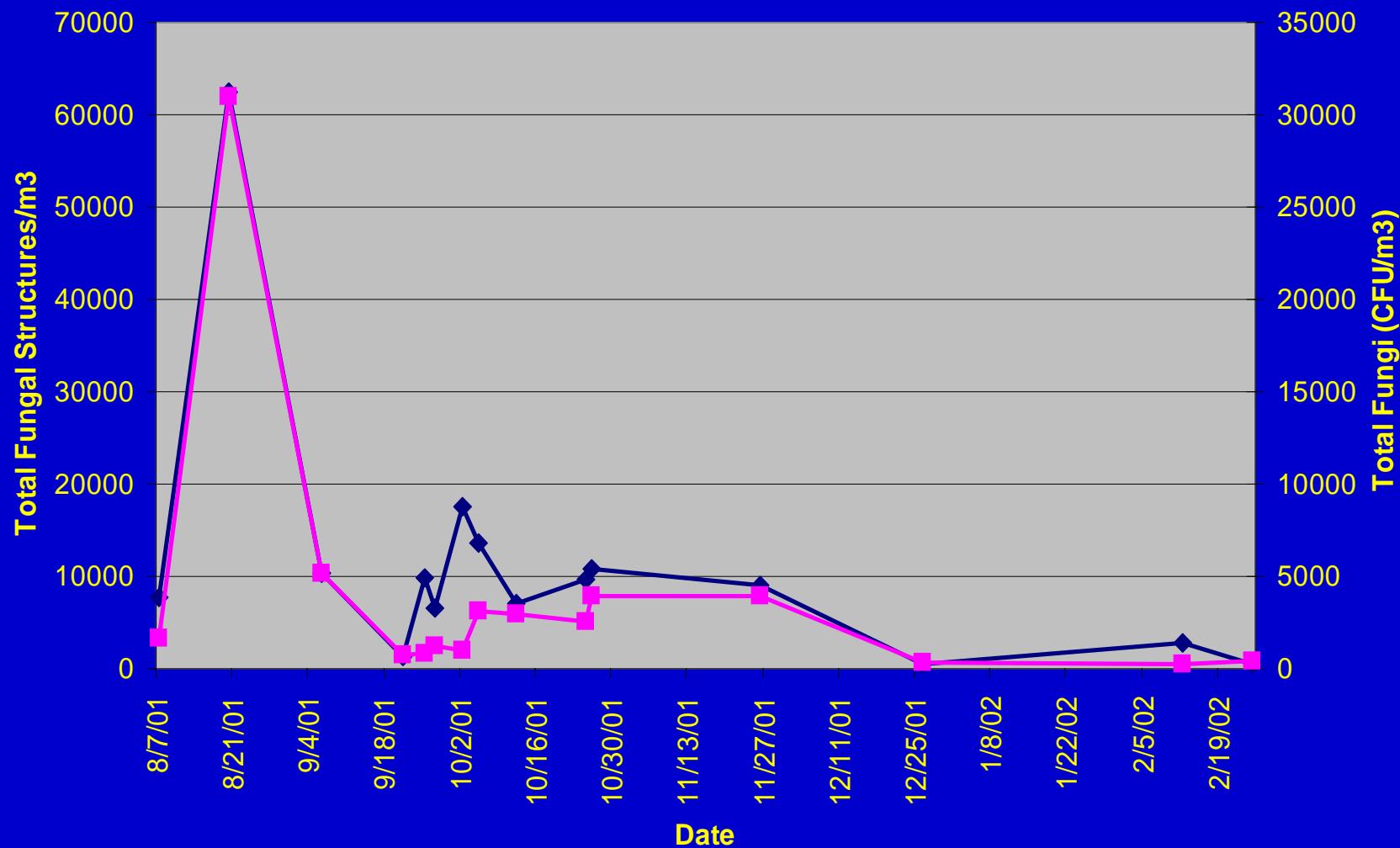


## Inside Viable Air vs. Swab Results

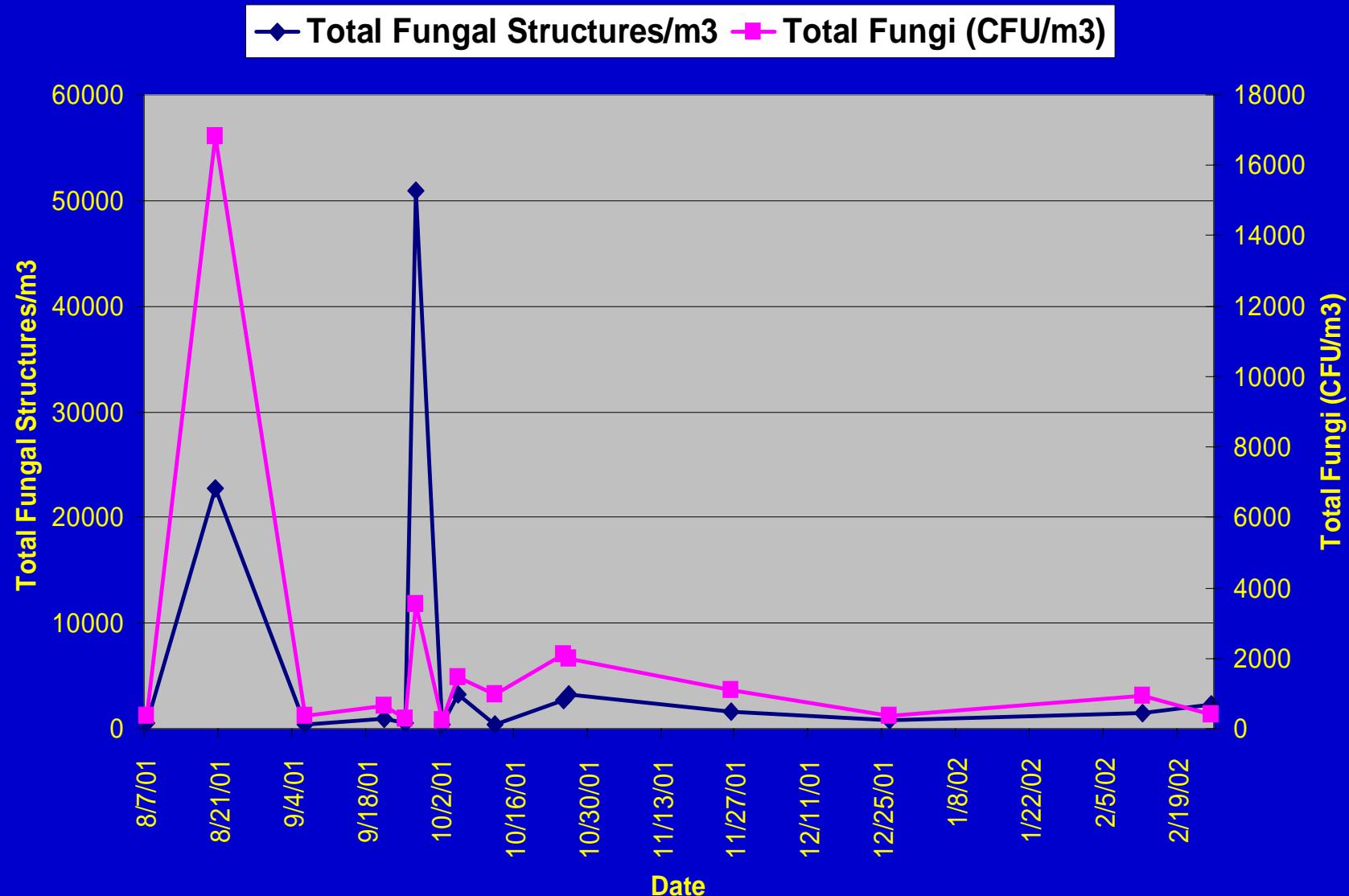


## Outside Nonviable and Viable

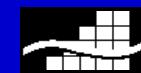
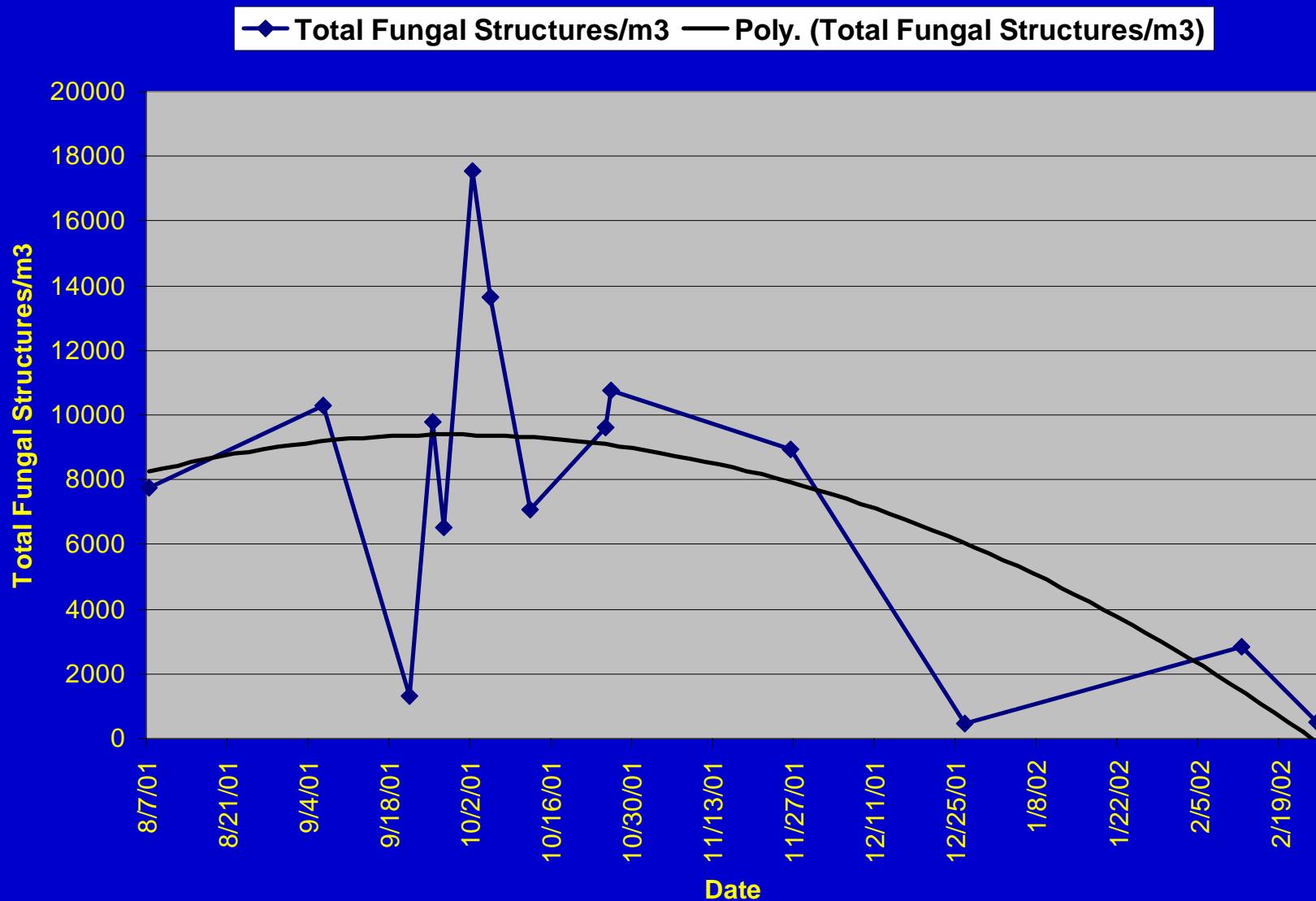
◆ Nonviable ■ Viable



## Inside Nonviable and Viable Results



## Nonviable Outside w/o Outlier



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# Nonviable Outside Air w/o Outlier (Total Fungal Structures/m<sup>3</sup>)

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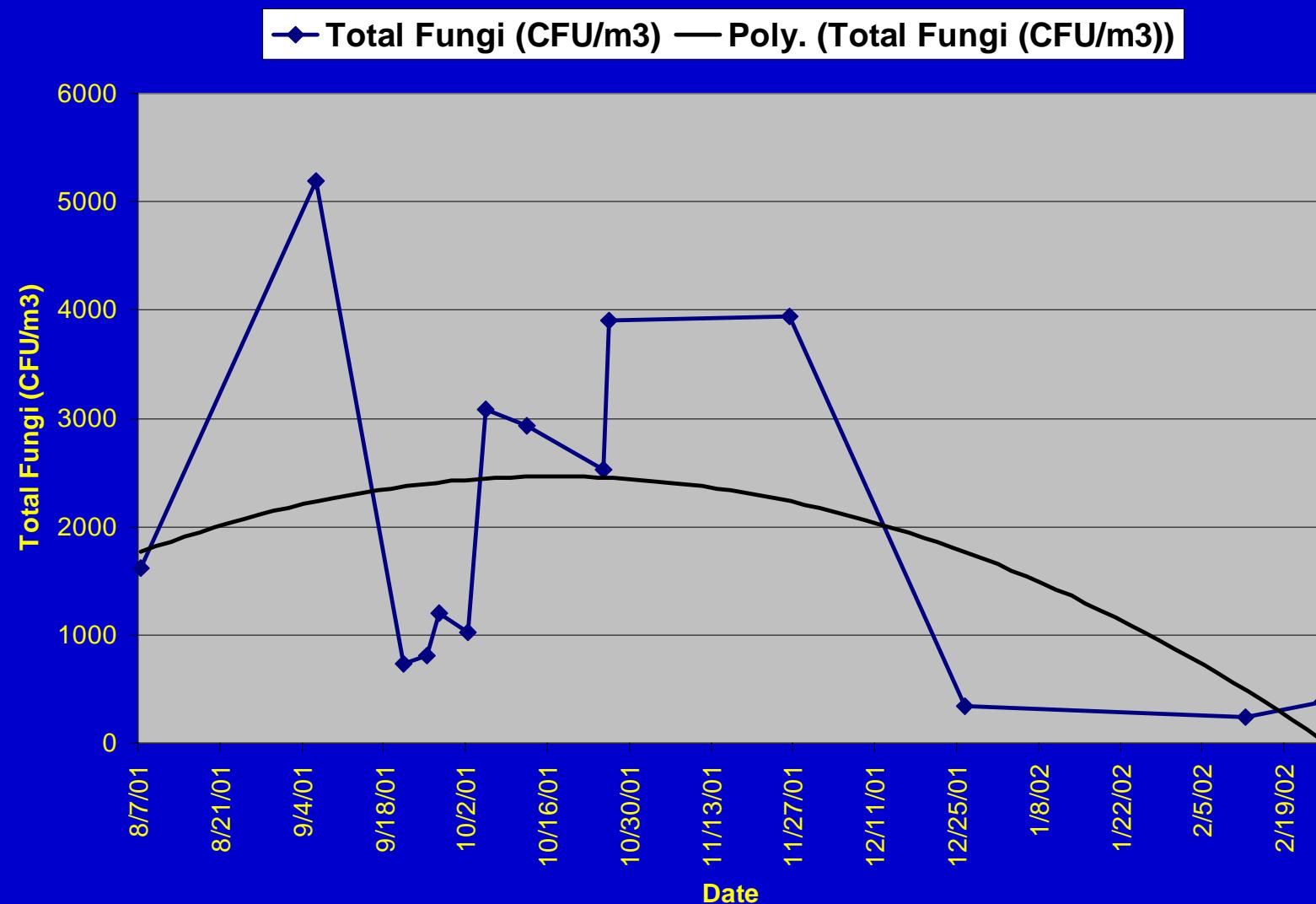
- Mean = 7,652
- Standard Deviation = 4,841

# Nonviable Outside Air (Total Fungal Structures/m<sup>3</sup>)

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- Mean = 11,315
- Standard Deviation = 14,465

## Viable Outside w/o Outlier



## Viable Outside Air w/o Outlier (Total Fungi in CFU/m<sup>3</sup>)

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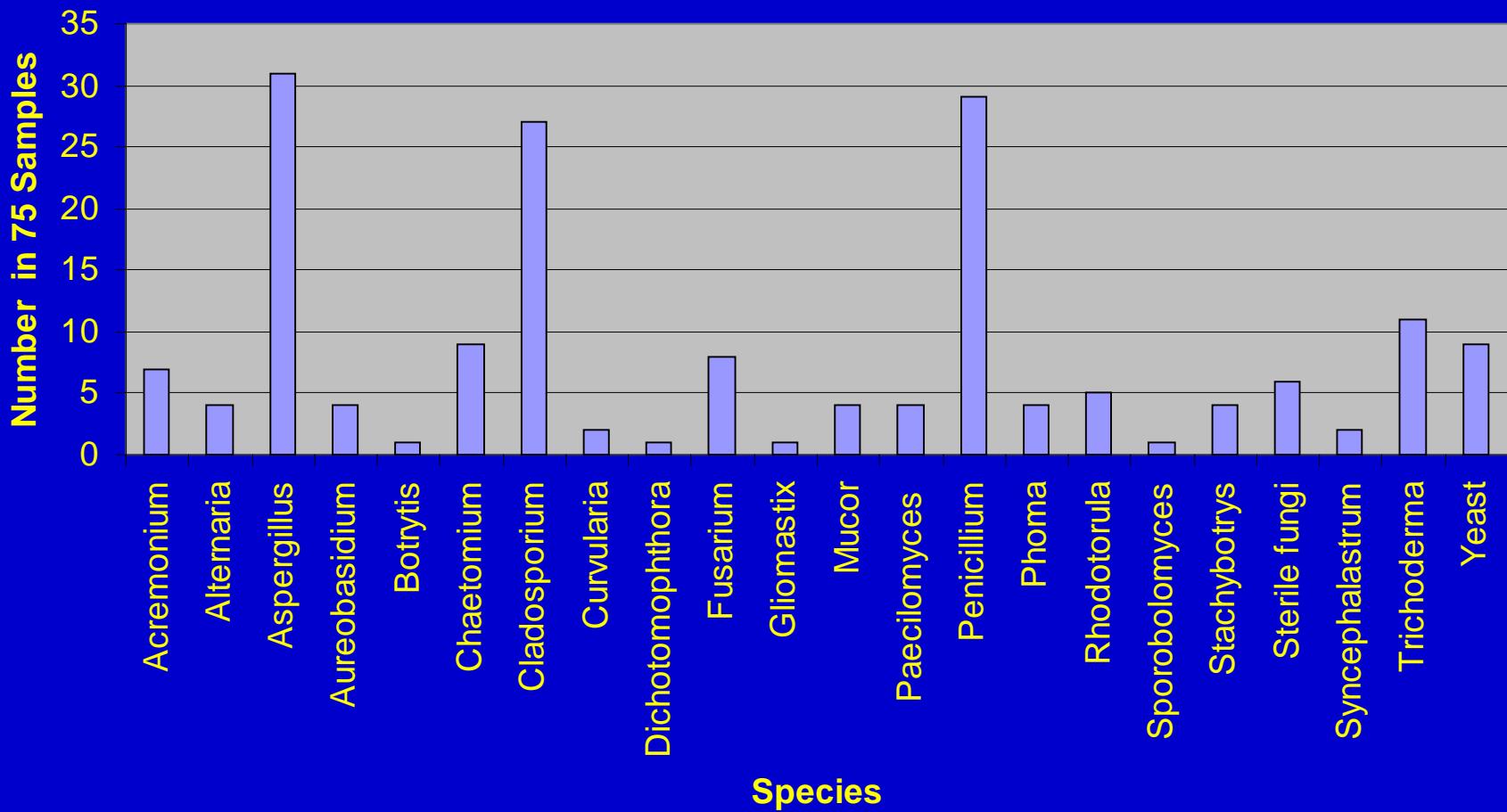
- Mean = 1,995
- Standard Deviation = 1,540

## Viable Outside Air (Total Fungi in CFU/m<sup>3</sup>)

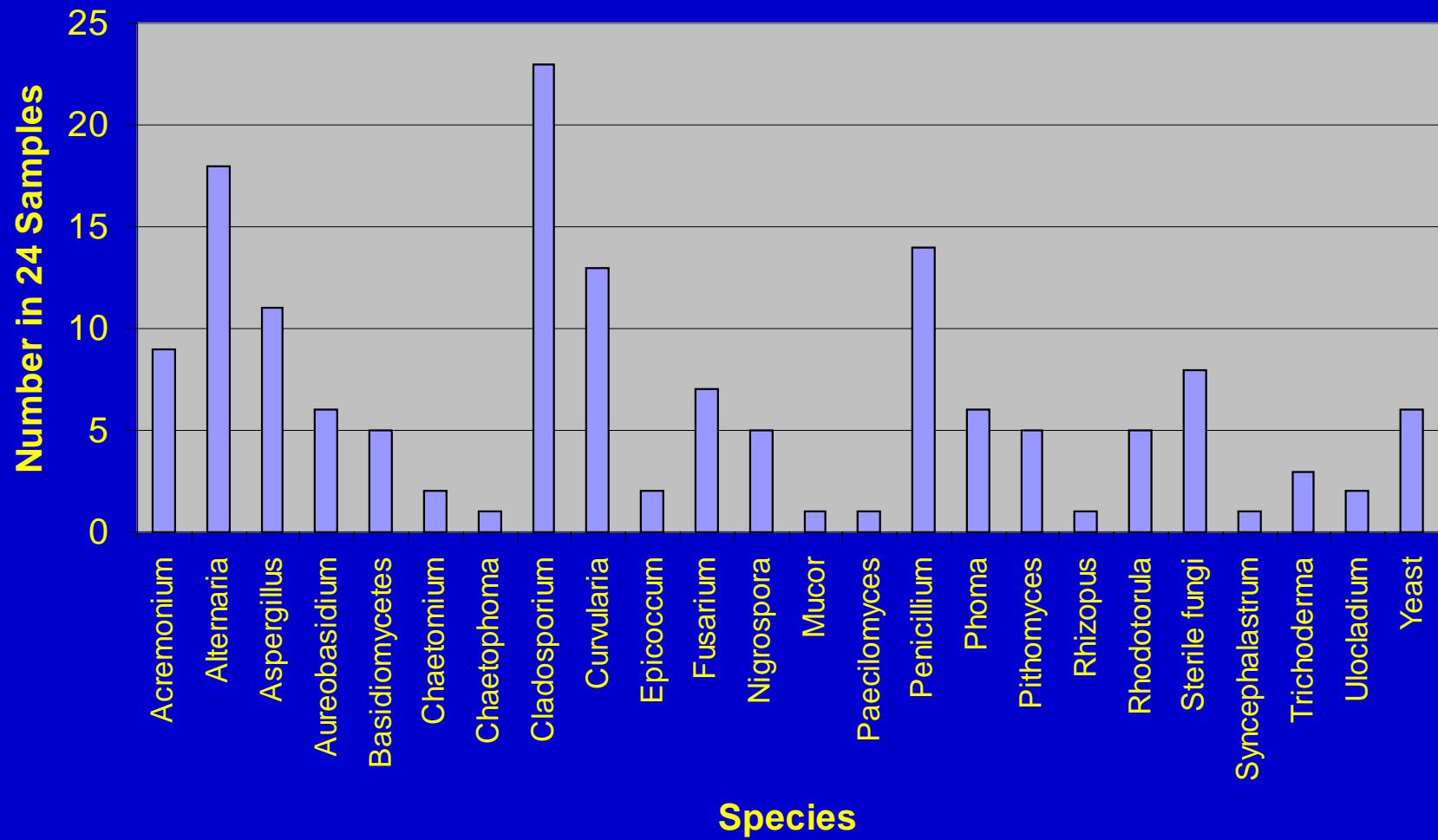
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- Mean = 3,925
- Standard Deviation = 7,375

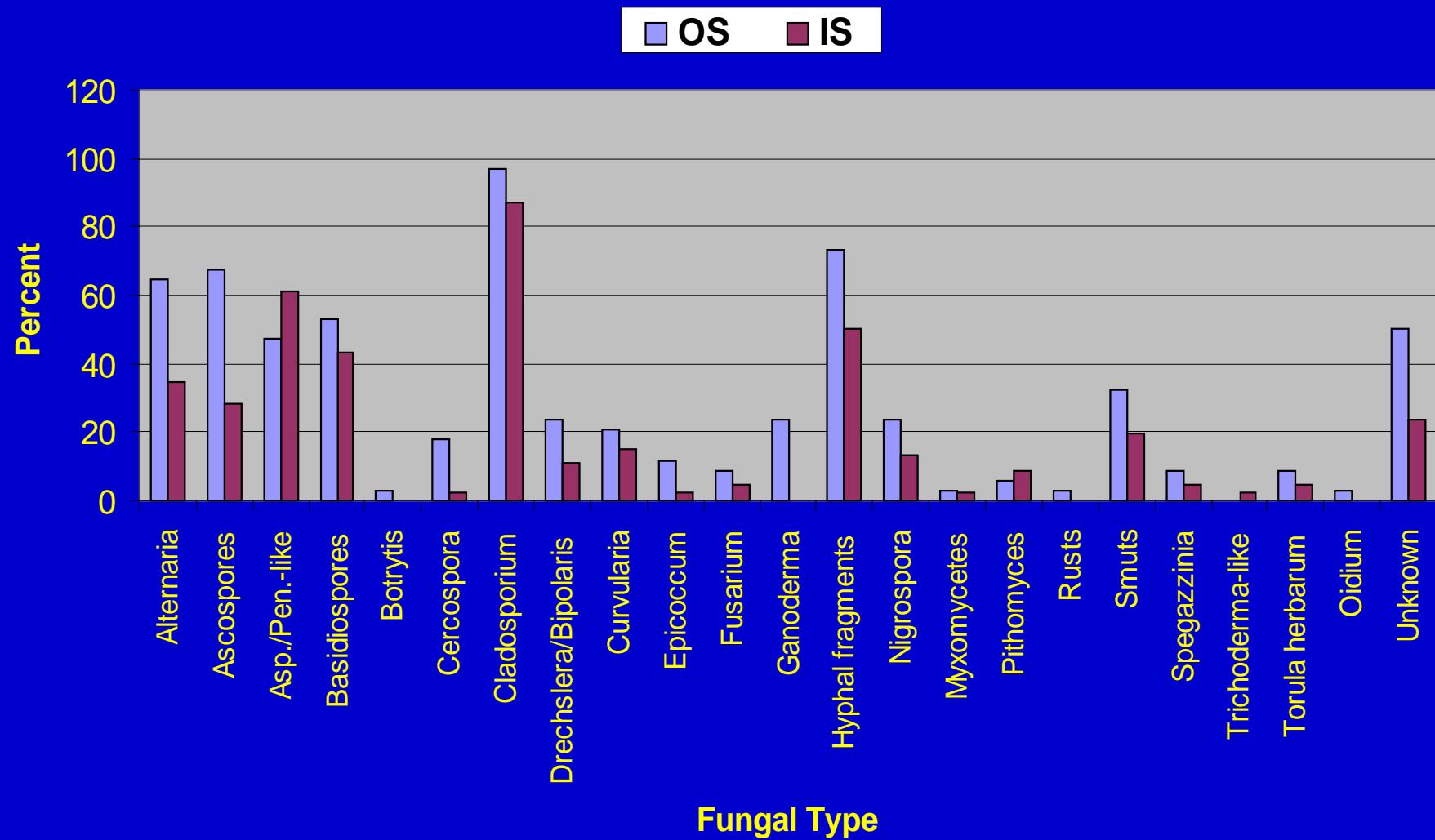
## Swab Samples



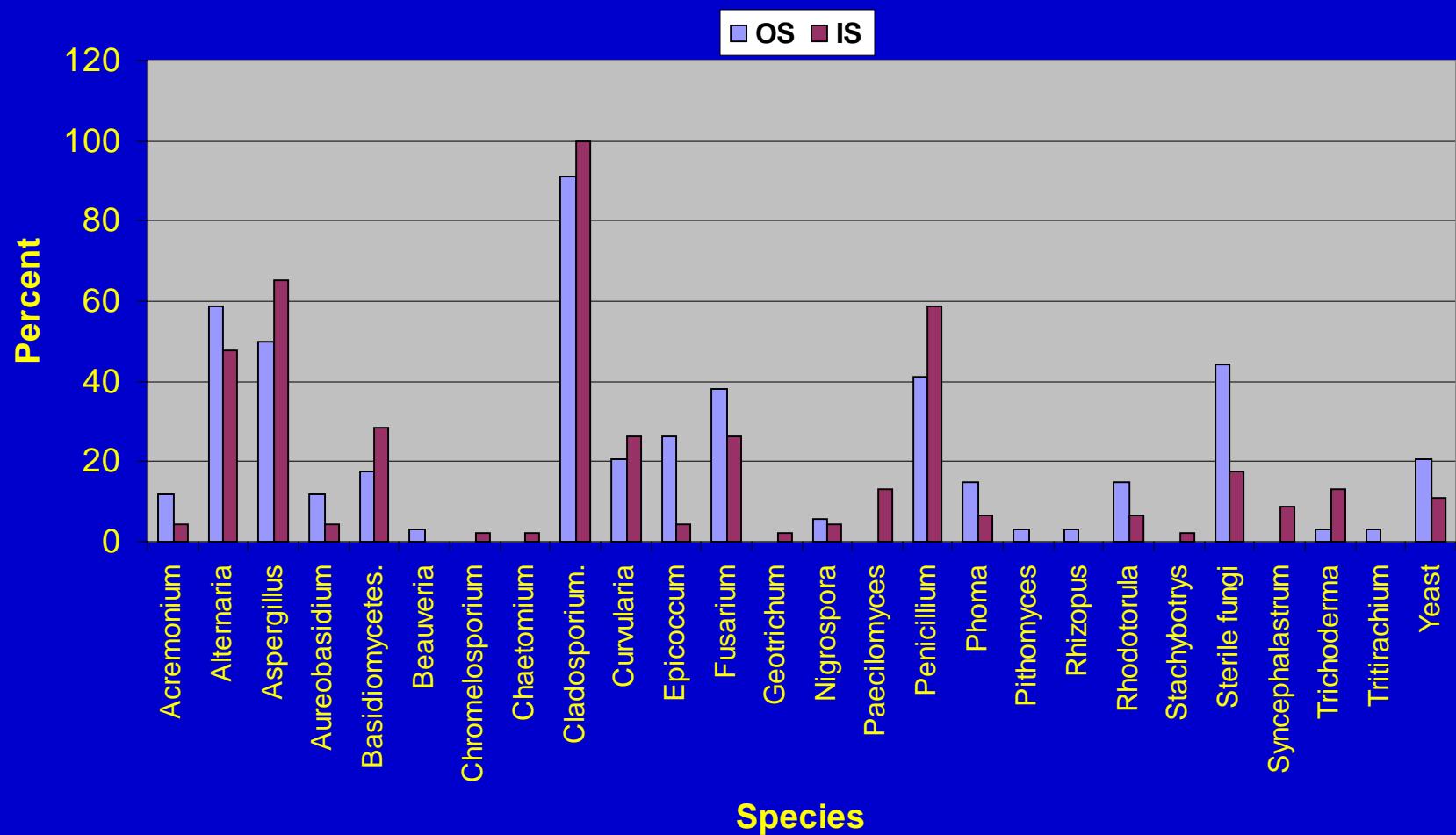
# Carpet Dust Samples



# Nonviable Air



## Viable Air



## Most Prevalent Outside Types (Nonviable)

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- **Alternaria**
- **Ascospores**
- **Basidiospores**
- **Aspergillus/Penicillium**
- **Cladosporium**

## Most Prevalent Outside Species (Viable)

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- **Alternaria**
- **Aspergillus niger**
- **Basidiomycetes**
- **Cladosporium**
- **Penicillium**

## Most Frequent Moisture Problems

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- **Plumbing leaks**
- **Roof leaks (flashing, penetrations damage)**
- **Water overflows (condensate drain pans and toilets)**
- **High humidity (resulting in condensation)**
- **Lack of vapor barrier**

# Unusual Moisture Problems

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- **Exterior siding failure**
- **Partial or inadequate air conditioning**

## Inside/Outside Comparison

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- Three (3) of the 15 studies had Total Fungal Structures/m<sup>3</sup> greater inside than out.
- Four (4) of the 15 studies had Total CFU/m<sup>3</sup> greater inside than out.
- Three (3) were higher inside than out in both measurements.

# Conclusions

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- **Viable air sampling is preferred to nonviable.**
- **Nonviable air sampling major benefit is quicker turnaround.**

## Clearance?

- **The primary seasonal variation outside is with Cladosporium, which decreases during the winter.**
- **The primary genera found in swab samples of visible growth are Aspergillus and Penicillium.**

# Conclusions

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- Better design and construction of HVAC systems are needed.
- Improved home maintenance and housekeeping are needed.
- Carpets are amplification sources, as well as sinks.
- Carpets impacts interior air samples.

General

Species

Concentration

